

SCF 518 **Extraction of Rosehip Seed Oil Using Supercritical Fluids**

Introduction

Rosehip oil is a valuable natural product for the cosmetic industry, yet conventional methods of extraction are often time consuming and rely heavily on the use of chemical solvents. Traditionally, the determination of oil in rosehip seeds is accomplished by soxhlet extraction. Since rosehip seeds contain a relatively low percentage of oil compared to other seeds this extraction method is labor intensive and requires a significant quantity of organic solvent, such as hexane.

SFE is an alternative technique using supercritical carbon dioxide to extract rosehip seed oil quickly and naturally in the laboratory. It eliminates the use, exposure to, and disposal of hazardous solvents, while providing comparable extraction results in less time.

Equipment

- ✓ Applied Separations' *Spe-ed* SFE Supercritical Extraction System

Materials

- ✓ *Spe-ed* Matrix (Cat. #7950)
- ✓ *Spe-ed* Wool (Cat. #7953)

- ✓ Carbon dioxide – industrial grade with dip tube



Method

Weigh 13g of ground rosehip seeds to an accuracy of ± 0.1 mg. Place a plug of *Spe-ed* Wool into an extraction vessel and pour the prepared sample into the vessel using a funnel, then place a plug of *Spe-ed* Wool on top. Compress the sample with a tamping rod, fill the void volume with *Spe-ed* Matrix, then seal the vessel. Install the vessel into the *Spe-ed* SFE.

Place a predried and preweighed collection vial containing a plug of *Spe-ed* Wool on the discharge tube. Extract sample according to the specified extraction conditions. Remove collection vial and dry residual moisture from oil to constant weight (AOAC Method 926.12).

Extraction Conditions

Extraction vessel:	24 mL
Sample:	13 g
Pressure:	10 000 psi
Temperature:	70 °C
Valve temperature:	120 °C
CO ₂ Flow Rate:	3 L/min (gas)
Collection:	60 mL pre-weighed vial
Dynamic time:	15 minutes

Conclusion

The supercritical carbon dioxide extraction of rosehip oil offers a viable alternative to solvent based procedures. The accuracy and precision of the results were comparable to the standard method while extraction times were reduced. In addition, the use of hazardous solvents was eliminated.

SCF Supercritical
Fluids

Application

World Leaders in Sample Preparation

References

Reverchon, E.; Kaziunas, A.; and Marrone, C.
“Supercritical CO₂ Extraction of Hiprose Seed
Oil: Experiments and Mathematical Modeling.”
Chemical Engineering Science 55 (2000) 2195-
2201.

The logo for Applied Separations features the word "Applied" in a bold, sans-serif font above the word "Separations" in a larger, bold, sans-serif font. To the left of the text are several horizontal lines of varying lengths, creating a stylized graphic element.

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